This listing of claims replaces all prior versions, and listings of claims in the instant application:

Listing of Claims:

1. (Currently Amended) A method for executing an obfuscated application program, the method comprising:

receiving, on a user device, an obfuscated application program that comprises application program instructions and application program data;

determining, in said user device during said execution of said obfuscated application, an application program instruction location permutation to apply to a current instruction counter value;

determining, in said user device during said execution of said obfuscated application, an application program data location permutation to apply to a current data location counter value;

receiving, in said user device during said execution of said obfuscated application, said current instruction counter value;

applying, in said user device during said execution of said obfuscated application, said application program instruction location permutation to said current instruction counter value to obtain a first reference to an application program instruction, in an instruction stream, to execute;

if said application program instruction references application program data, applying, in said user device during said execution of said obfuscated application, said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access interleaved with application program instructions in said instruction stream; and

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executing, in said user device during said execution of said obfuscated application, said application program instruction.

2. (Original) The method of claim 1 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

3. (Original) The method of claim 1 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

4. (Original) The method of claim 1 wherein at least some of said data to access comprises randomized data.

5. (Original) The method of claim 4 wherein said randomized data is formatted to appear like one or more valid instructions.

6. (Currently Amended) The method of claim 1, further comprising:

determining, in said user device during said execution of said obfuscated application, whether there is another application program instruction to be executed;

advancing, in said user device during said execution of said obfuscated application, said current instruction counter if there is another application program instruction to be executed; and

repeating, in said user device during said execution of said obfuscated application, said receiving said current instruction counter value, said ~~applying~~transformings and said executing after said advancing.

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7. (Currently Amended) A method for application program obfuscation, the method comprising:

reading, at an application program provider, a first application program comprising application program instructions and application program data wherein execution of said first application program itself provides a service;

determining, at said application program provider, an application program instruction location permutation;

determining, at said application program provider, a memory storage location for at least one application program instruction of said first application program;

~~that transforms~~ transforming, at said application program provider, said memory storage location using said application program instruction location permutation to generate~~said first application program into~~ an obfuscated application program~~, said obfuscated application program~~ having at least one application program instruction stored at a memory location that is based at least in part on a permutation of the memory storage location of ~~where the corresponding~~ said at least one application program instruction ~~is stored~~ in said first application program;

~~determining a first instruction location of said first application program;~~

determining, at said application program provider, an application program data location permutation;

determining, at said application program provider, a memory storage location for at least one datum of said first application program;

~~that transforms~~transforming, at said application program provider, said storage memory location of said at least one datum using said application program data location permutation to generate ~~said first application program into an obfuscated application program,~~ in said obfuscated application program, ~~having~~ at least one application program datum stored at a memory location that is based at least in part on a permutation of the

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memory storage location ~~where the corresponding application program datum~~ of said at least one datum~~is stored~~ in said first application program[[;]],

~~determining a first data location of said first application program;~~

wherein said transforming using~~applying~~ said application program instruction location permutation and said transforming using said application program data location permutation ~~to said first application program to create an obfuscated application program comprising~~ creates an instruction stream for said obfuscated application program having application program data interspersed with application program instructions; and

sending, at said application program provider, said obfuscated application program.

8. (Original) The method of claim 7 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

9. (Original) The method of claim 7 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

10. (Original) The method of claim 7 wherein at least some of said data to access comprises randomized data.

11. (Original) The method of claim 10 wherein said randomized data is formatted to appear like one or more valid instructions.

12. (Original) The method of claim 7, further comprising receiving an application program request from a user device, said determining occurring in response to said receiving.

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13. (Currently Amended) The method of claim 7 wherein said method further comprises[[,]]:

~~after said applying said application program instruction location permutation and said application program data location permutation,~~ applying, following completion of said transformings, a cryptographic process to said obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program; and

said sending comprises sending said encrypted obfuscated application program.

14. (Currently Amended) A program storage device comprising a computer readable medium having embodied therein computer readable instructions, wherein execution of said computer readable instructions results in a method for executing an obfuscated application program, the method comprising:

receiving, on a user device, an obfuscated application program that comprises application program instructions and application program data ;

determining, in said user device during said execution of said obfuscated application, an application program instruction location permutation to apply to a current instruction counter value;

determining, in said user device during said execution of said obfuscated application, an application program data location permutation to apply to a current data location counter value;

receiving, in said user device during said execution of said obfuscated application, said current instruction counter value;

applying, in said user device during said execution of said obfuscated application, said application program instruction location permutation to said current instruction counter value to obtain a

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first reference to an application program instruction, in an instruction stream, to execute;

if said application program instruction references application program data, applying, in said user device during said execution of said obfuscated application, said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access interleaved with application program instructions in said instruction stream; and

executing, in said user device during said execution of said obfuscated application, said application program instruction.

15. (Original) The program storage device of claim 14 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

16. (Original) The program storage device of claim 14 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

17. (Original) The program storage device of claim 14 wherein at least some of said data to access comprises randomized data.

18. (Original) The program storage device of claim 17 wherein said randomized data is formatted to appear like one or more valid instructions.

19. (Currently Amended) The program storage device of claim 14, said method further comprising:

determining, in said user device during said execution of said obfuscated application, whether there is another application program instruction to be executed;

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advancing, in said user device during said execution of said obfuscated application, said current instruction counter if there is another application program instruction to be executed; and

repeating, in said user device during said execution of said obfuscated application, said receiving said current instruction counter value, said ~~applying~~transformings and said executing after said advancing.

20. (Currently Amended) A program storage device comprising a computer readable medium having embodied therein computer readable instructions, wherein execution of said computer readable instructions results in a method for application program obfuscation, the method comprising:

reading, at an application program provider, a first application program comprising application program instructions and application program data wherein execution of said first application program itself provides a service;

determining, at said application program provider, an application program instruction location permutation;

determining, at said application program provider, a memory storage location for at least one application program instruction of said first application program;

~~that transforms~~ transforming, at said application program provider, said memory storage location using said application program instruction location permutation to generate~~said first application program into~~ an obfuscated application program~~, said obfuscated application program~~ having at least one application program instruction stored at a memory location that is based at least in part on a permutation of the memory storage location of ~~where the corresponding~~ said at least one application program instruction ~~is stored~~ in said first application program;

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~~determining a first instruction location of said first application program;~~

determining, at said application program provider, an application program data location permutation;

determining, at said application program provider, a memory storage location for at least one datum of said first application program;

~~that transforms~~transforming, at said application program provider, said storage memory location of said at least one datum using said application program data location permutation to generate ~~said first application program into an obfuscated application program,~~ in said obfuscated application program, ~~having~~ at least one application program datum stored at a memory location that is based at least in part on a permutation of the memory storage location ~~where the corresponding application program datum~~ of said at least one datum~~is stored~~ in said first application program[[;]],

~~determining a first data location of said first application program;~~

wherein said transforming using~~applying~~ said application program instruction location permutation and said transforming using said application program data location permutation ~~to said first application program to create an obfuscated application program comprising~~ creates an instruction stream for said obfuscated application program having application program data interspersed with application program instructions; and

sending, at said application program provider, said obfuscated application program.

21. (Original) The program storage device of claim 20 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

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22. (Original) The program storage device of claim 20 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

23. (Original) The program storage device of claim 20 wherein at least some of said data to access comprises randomized data.

24. (Original) The program storage device of claim 23 wherein said randomized data is formatted to appear like one or more valid instructions.

25. (Previously Presented) The program storage device of claim 20, said method further comprising receiving an application program request from a user device, said determining occurring in response to said receiving.

26. (Currently Amended) The program storage device of claim 20 wherein

said method further comprises[[,]]:

~~after said applying said application program instruction location permutation and said application program data location permutation,~~ applying, following completion of said transformings, a cryptographic process to said obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program; and

said sending comprises sending said encrypted obfuscated application program.

27. Currently Amended) An apparatus for executing an obfuscated application program, the apparatus comprising:

means for receiving, on a user device, an obfuscated application program that comprises application program instructions and application program data;

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means for determining, in said user device during said execution of said obfuscated application, an application program instruction location permutation to apply to a current instruction counter value;

means for determining, in said user device during said execution of said obfuscated application, an application program data location permutation to apply to a current data location counter value;

means for receiving, in said user device during said execution of said obfuscated application, said current instruction counter value;

means for applying, in said user device during said execution of said obfuscated application, said application program instruction location permutation to said current instruction counter value to obtain a first reference to an application program instruction, in an instruction stream, to execute;

means for, if said application program instruction references application program data, applying, in said user device during said execution of said obfuscated application, said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access interleaved with application program instructions in said instruction stream; and

means for executing, in said user device during said execution of said obfuscated application, said application program instruction.

28. (Original) The apparatus of claim 27 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

29. (Original) The apparatus of claim 27 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

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30. (Original) The apparatus of claim 27 wherein at least some of said data to access comprises randomized data.

31. (Original) The apparatus of claim 30 wherein said randomized data is formatted to appear like one or more valid instructions.

32. (Currently Amended) The apparatus of claim 27, further comprising:

means for determining, in said user device during said execution of said obfuscated application, whether there is another application program instruction to be executed;

means for advancing, in said user device during said execution of said obfuscated application, said current instruction counter if there is another application program instruction to be executed; and

means for repeating, in said user device during said execution of said obfuscated application, said receiving said current instruction counter value, said ~~applying~~transformings and said executing after said advancing.

33. (Currently Amended) An apparatus for application program obfuscation, the apparatus comprising:

means for reading, at an application program provider, a first application program comprising application program instructions and application program data wherein execution of said first application program itself provides a service;

means for determining, at said application program provider, an application program instruction location permutation;

means for determining, at said application program provider, a memory storage location for at least one

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application program instruction of said first application program;

~~that transforms~~means for transforming, at said application program provider, said memory storage location using said application program instruction location permutation to generate~~said first application program into~~ an obfuscated application program~~, said obfuscated application program~~ having at least one application program instruction stored at a memory location that is based at least in part on a permutation of the memory storage location of ~~where the corresponding~~ said at least one application program instruction ~~is stored~~ in said first application program;

~~means for determining a first instruction location of said first application program;~~

means for determining, at said application program provider, an application program data location permutation;

means for determining, at said application program provider, a memory storage location for at least one datum of said first application program;

~~that transforms~~means for transforming, at said application program provider, said storage memory location of said at least one datum using said application program data location permutation to generate ~~said first application program into an obfuscated application program,~~ in said obfuscated application program, ~~having~~ at least one application program datum stored at a memory location that is based at least in part on a permutation of the memory storage location ~~where the corresponding application program datum~~ of said at least one datum~~is stored~~ in said first application program[[;]],

~~means for determining a first data location of said first application program;~~

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wherein said means for transforming using~~applying~~ said application program instruction location permutation and said means for transforming using said application program data location permutation ~~to said first application program to create an obfuscated application program comprising~~ creates an instruction stream for said obfuscated application program having application program data interspersed with application program instructions; and

means for sending, at said application program provider, said obfuscated application program.

34. (Original) The apparatus of claim 33 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

35. (Original) The apparatus of claim 33 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

36. (Original) The apparatus of claim 33 wherein at least some of said data to access comprises randomized data.

37. (Original) The apparatus of claim 36 wherein said randomized data is formatted to appear like one or more valid instructions.

38. (Original) The apparatus of claim 33, said apparatus further configured to receive an application program request from a user device, said determining occurring in response to said receiving.

39. (Currently Amended) The apparatus of claim 33 wherein said apparatus further comprises[[,]]:

~~after said applying said application program instruction location permutation and said application~~

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~~program data location permutation,~~ means for applying, following completion of said transformings, a cryptographic process to said obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program; and

said means for sending comprises means for sending said encrypted obfuscated application program.

40. (Currently Amended) An apparatus for executing an obfuscated application program, the apparatus comprising a user device configured to:

receive, on said user device, an obfuscated application program that comprises application program instructions and application program data;

determine, in said user device during said execution of said obfuscated application, an application program instruction location permutation to apply to a current instruction counter value;

determine, in said user device during said execution of said obfuscated application, an application program data location permutation to apply to a current data location counter value;

receive, in said user device during said execution of said obfuscated application, said current instruction counter value;

apply, in said user device during said execution of said obfuscated application, said application program instruction location permutation to said current instruction counter value to obtain a first reference to an application program instruction, in an instruction stream, to execute;

apply, in said user device during said execution of said obfuscated application, said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access

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interleaved with application program instructions in said instruction stream; and

execute, in said user device during said execution of said obfuscated application, said application program instruction.

41. (Original) The apparatus of claim 40 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

42. (Original) The apparatus of claim 40 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

43. (Original) The apparatus of claim 40 wherein at least some of said data to access comprises randomized data.

44. (Original) The apparatus of claim 43 wherein said randomized data is formatted to appear like one or more valid instructions.

45. (Currently Amended) The apparatus of claim 40, said user device further configured to:

determine, in said user device during said execution of said obfuscated application, whether there is another application program instruction to be executed;

advance, in said user device during said execution of said obfuscated application, said current instruction counter if there is another application program instruction to be executed; and

repeat, in said user device during said execution of said obfuscated application, said receiving said current instruction counter value, said ~~applying~~transformings and said executing after said advancing..

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46. (Currently Amended) An apparatus for application program obfuscation, the apparatus comprising an application program provider configured to:

read, at said application program provider, a first application program comprising application program instructions and application program data wherein execution of said first application program itself provides a service;

determine, at said application program provider, an application program instruction location permutation;

determine, at said application program provider, a memory storage location for at least one application program instruction of said first application program;

~~that transforms~~ transform, at said application program provider, said memory storage location using said application program instruction location permutation to generate~~said first application program into~~ an obfuscated application program~~, said obfuscated application program~~ having at least one application program instruction stored at a memory location that is based at least in part on a permutation of the memory storage location of ~~where the corresponding~~ said at least one application program instruction~~is stored~~ in said first application program;

~~determine a first instruction location of said first application program;~~

determine, at said application program provider, an application program data location permutation;

determine, at said application program provider, a memory storage location for at least one datum of said first application program;

~~that transforms~~transform, at said application program provider, said storage memory location of said at least one datum using said application program data location permutation to generate ~~said first application program into an obfuscated application program,~~ in said

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obfuscated application program, ~~having~~ at least one application program datum stored at a memory location that is based at least in part on a permutation of the memory storage location ~~where the corresponding application program datum~~ of said at least one datum~~is stored~~ in said first application program[[;]],

~~determine a first data location of said first application program;~~

wherein said transforming using~~apply~~ said application program instruction location permutation and said transforming using said application program data location permutation ~~to said first application program to create an obfuscated application program comprising~~ creates an instruction stream for said obfuscated application program having application program data interspersed with application program instructions; and

send, at said application program provider, said obfuscated application program.

47. (Original) The apparatus of claim 46 wherein said application program data comprises at least one cryptographic key for use in decrypting data.

48. (Original) The apparatus of claim 46 wherein at least some of said data to access is formatted to appear like one or more valid instructions.

49. (Original) The apparatus of claim 46 wherein at least some of said data to access comprises randomized data.

50. (Original) The apparatus of claim 49 wherein said randomized data is formatted to appear like one or more valid instructions.

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51. (Original) The apparatus of claim 46, said application program provider further configured to receive an application program request from a user device, said determining occurring in response to said receiving.

52. (Currently Amended) The apparatus of claim 46 wherein said application program provider is further configured to[[,]]:

~~after said applying said application program instruction location permutation and said application program data location permutation,~~ apply, following completion of said transformings, a cryptographic process to said obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program; and

said application program provider is further configured to send said encrypted obfuscated application program.

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